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ABSTRACT

A study was conducted to investigate the compensatory effects of graphic organizers on text organization. Subjects were 114 tenth grade students who read two versions of an expository passage containing identical information but differing in top level structure. The version organized to show opposing views (comparison/contrast) was considered superior in facilitating recall to the version that simply related ideas to a main topic (description). However, on an immediate free recall task, multiple regression analyses revealed that regardless of students' reading ability level, performance was positively affected only for those in the descriptive text condition who had also been exposed to a graphic organizer prior to reading. The same effect was observed one week later on delayed free and delayed cued recall measures. Results from this study support R. E. Mayer's assimilation encoding theory stating that organizers may help readers "hold" incoming information from text that is less than optimal in its organization until that information can be pieced together. (Author/JL)

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ORGANIZERS THAT COMPENSATE FOR TEXT ORGANIZATION: RESEARCH WITH APPLICATION TO TEACHING READING

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Studies in learning from text represent a recent thrust in reading research. In general, findings indicate that comprehension and retention are facilitated to the extent that a reader is able to recognize and use the organization found in expository prose. For that reason, research on the structure of text has practical appeal and implications for both educators and textbook publishers.

Although several studies have examined the relationship between different types of text organization and recall (Meyer, 1975; Meyer, Brandt, & Bluth, 1978), there exists insufficient agreement regarding the results to permit establishing firm guidelines for text selection (Meyer, 1979). Lack of agreement is even more polarized when reading ability and different types of instructional strategies are considered as variables in text learning. For example, the controversy surrounding the effectiveness of instruction which uses advance organizers of various kinds continues to appear in the literature (Barnes & Clawson, 1975; Lawton & Wanska, 1977; Mayer, 1979). In the past, main effects of organizers have been of primary concern with only occasional attention being given to interactions between text and organizers. Unfortunately, little new information is gained when main effect findings merely add to, or subtract from, the purported effectiveness of such instruction.

The present study, therefore, attempted to clarify conditions under which organizers may facilitate what is learned and retained from

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text. Specifically it investigated, within the framework of schema theory, the idea that graphic organizers may be used to compensate for the effects of text deemed less than optimal in its organizational structure.

Method

Design

The design involved one continuous variable (reading comprehension level as measured by the Stanford Diagnostic Reading Test, Blue Level), and two categorical variables: 1) type of instructional strategy (graphic organizer versus no graphic organizer) and 2) type of text organization (comparison/contrast versus description). The dependent variable (idea units recalled) was measured three times: immediately after students had read an experimental passage (immediate free recall); one week later (delayed free recall); and one week later but with cues provided (delayed cued recall).

Subjects

A table of random numbers was used to select 128 students from a larger pool of tenth graders enrolled in Regents and non-Regents courses at a high school in Gloversville, New York. Those students were assigned to four groups through stratified random assignment by reading comprehension level. Subsequently, the groups were randomly assigned to four treatment conditions. Absenteeism at either the immediate or delayed posttest times resulted in incomplete sets of recalls for 14 students. Consequently, 114 subjects composed the final sample for statistical analyses.

Material

Both versions of the experimental passage used in this study dealt with the loss of body water and had a substantial research history (Brandt,

1978; Meyer, 1977). In the comparison/contrast version, ideas related to each other as well as to the superordinate idea. In the descriptive version, however, ideas simply related to the superordinate idea. Each version was embedded between two paragraphs containing information related to the loss of body water. The concluding paragraph served as a buffer and controlled for short term memory effects.

Procedures and Scoring

The experiment was conducted in two sessions, one week apart. In both sessions, students reported to a pre-assigned classroom during regularly scheduled class periods in groups of approximately 16 each. Students in the two experimental conditions were exposed to different versions of the body water passage, but they received the same graphic organizer. The latter had been constructed using key vocabulary terms to reflect the top-level structure of the comparison/contrast version. This was done to encourage those who received the descriptive version to reorganize its information, in effect to process it more deeply (cf. Craik & Lockhart, 1972). The two control groups were also exposed to different versions of the passage, but they did not receive a graphic organizer.

During session one, students in the experimental groups were instructed to study the partially completed graphic organizer, noting the two opposing views and the missing information represented by empty boxes. After a brief exposure, the organizer was removed from view and the passage was handed out. Students were reminded that looking for the author's two opposing views would help them find and remember the missing information. The procedure differed for the control subjects. They were informed prior to receiving the passage that just thinking about how they read to remember

would help them recall ideas more easily. One week later each subject was given an experimental booklet which contained directions and paper for the delayed free and cued recalls.

Meyer's (1975) system of prose analysis was used to score students' recall protocols. Each protocol's content structure was checked against the content structure of the original passage for the presence or absence of specific content and/or relationship units, the sum of which was expressed in "idea units" recalled.

Results and Discussion

Multiple regression analyses revealed that regardless of students' reading ability level, performance was positively affected only for those in the descriptive text condition who had also been exposed to a graphic organizer. The following table summarizes the findings for the interaction between text and strategy at each of three recall times:

Type of Recall	Full Model	Interaction Effect
Immediate Free	$F=(7,106)=10.33$ $p<.001$ ($R^2=.41$)	$F(1,112)=14.47$, $p<.001$ ($R^2=.08$)
Delayed Free	$F=(7,106)=11.65$, $p<.001$ ($R^2=.43$)	$F(1,112)=12.32$, $p<.001$ ($R^2=.07$)
Delayed Cued	$F=(7,106)=6.01$, $p<.001$ ($R^2=.28$)	$F(1,112)=4.09$, $p<.05$ ($R^2=.03$)

Since it was shown that graphic organizers can be used to compensate for the effects of text organized with descriptive top-level structure, the results have practical implications for classroom teachers who are seeking ways to help students comprehend and retain more of what they read.

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